

Seam Joining Techniques for Three-Dimensional Woven Carbon Material of at Least 1" Thickness., Phase I

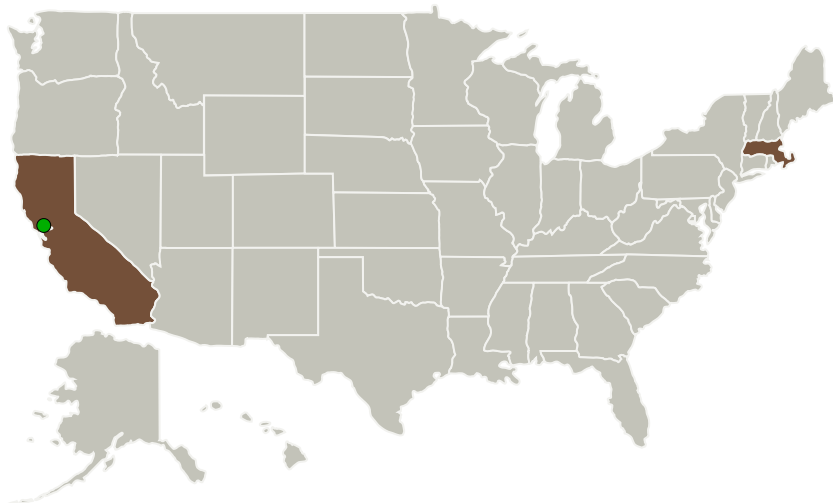
Completed Technology Project (2014 - 2014)



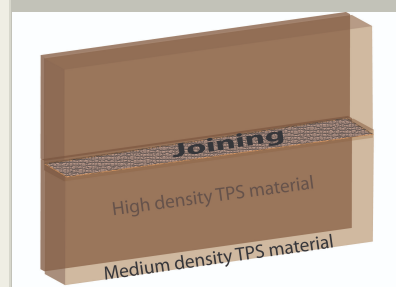
Project Introduction

Heat shield technology is a critical component for both re-entry and hypersonic vehicles. The traditional manufacturing approach for designing heat shields consists of joining TPS tiles together with an adhesive that fills any gaps between them. This approach has significant challenges, including the reduction in thermal-mechanical performance as compared to that of acreage woven material. Nhung's Notions proposes to address this problem by modifying existing equipment to mechanically join these materials prior to infusion. In Phase I, we will determine the material and pattern parameters required to use with equipment to prepare the joins while minimizing damage to the pristine woven material while maintaining consistent thickness between pre- and post- joined material keeping pattern consistency throughout the process.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Nhung's Notions	Lead Organization	Industry	SAUGUS, Massachusetts
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California



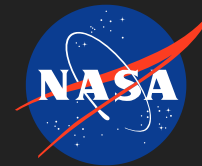
Seam joining techniques for three-dimensional woven carbon material of at least 1" thickness. Project Image

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Primary U.S. Work Locations

California

Massachusetts

Project Transitions



June 2014: Project Start



December 2014: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138484>)

Images



Project Image

Seam joining techniques for three-dimensional woven carbon material of at least 1" thickness. Project Image
(<https://techport.nasa.gov/image/126471>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nhung's Notions

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Pham Tuyetnhung

Co-Investigator:

Pham Tuyetnhung

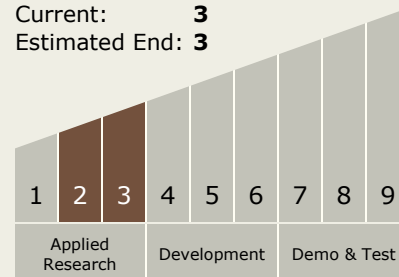
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Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.7 Special Materials

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System